

On the representation of Łukasiewicz-Moisil algebras by intuitionistic fuzzy sets

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The aim of the paper is the elaboration of a representation theory of involutive θ -valued Łukasiewicz-Moisil algebra, the concept of intuitionistic fuzzy sets playing the role that the notion of field of sets plays for the representation of Boolean algebras. This theory provides both a semantic interpretation of Łukasiewicz many valued logic and logical basis to intuitionistic fuzzy set theory.

In 1941 [4] Moisil introduced the notion of Łukasiewicz-Moisil algebra under the name Łukasiewiczian algebras, as an algebraic counterpart of the Łukasiewicz many-valued logics. The theory of Łukasiewicz-Moisil algebras has developed both as a tool for studying certain non-classical logics and as an algebraic theory having its own interest; besides, it is now considered one of the fundamental formalizations of fuzzy logic. The reader is referred e.g. to [10], [11].

Not long after Zadeh published his important paper \ll fuzzy sets \gg [14] Atanassov published the paper \ll intuitionistic fuzzy sets \gg [11]. The concept of intuitionistic fuzzy sets is a generalization of the concept of fuzzy sets.

In this paper we want to study, in a general way the relationships between the involutive θ -valued Łukasiewicz-Moisil algebra and algebras of intuitionistic fuzzy sets.

In Section 1, we will remind the reader what an involutive θ -valued Łukasiewicz-Moisil algebras is [4], we recall the definition of intuitionistic fuzzy sets [11] and we will define the intuitionistic weak α -cut and intuitionistic strong α -cut. Section 2 describes our main results.